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THE INFLUENCE OF PROJECT SUCCESS ON THE OVERALL FIRM PERFORMANCE

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Since its dawn as a discipline in the 1950s, Project Management (PM) has been configured as a normative discipline mainly focused on the development and improvement of tools and techniques for managing projects. Both PM professionals and scholars believed that the achievement of project success depended on the correct application of the techniques already developed. However, despite the great sophistication of PM tools and the numerous articles that have been written about project success and the critical success factors, there is still a great percentage of projects that fail. A new stream of research is nowadays focusing on applying a business perspective to the study of projects and project-based firms. The main hypothesis is that projects are developed within the boundaries of a permanent organization and so the study of projects in isolation has to be at least complemented by research acknowledging projects as history dependent and organizationally-embedded. Given this new ontology, developing successful projects is a necessary but no longer sufficient condition to secure long term organizational performance. Based on an international sample of projects, this paper addresses the question of how project success contributes to the overall firm performance.

Keywords: *project success; portfolio success; project-based firms*

LA INFLUENCIA DEL ÉXITO DE LOS PROYECTOS EN LA CONSECUCCIÓN DE LAS METAS GLOBALES DE LA EMPRESA

Desde su nacimiento como disciplina en los años 1950s, la dirección de proyectos se ha centrado en el desarrollo de técnicas para la correcta gestión de los proyectos con un enfoque eminentemente normativo. Tanto académicos como profesionales entendían que el éxito de los proyectos venía dado por la correcta o incorrecta aplicación de las técnicas ya desarrolladas. Sin embargo, pese a la elevada sofisticación que han alcanzado las técnicas de dirección de proyectos y al elevado número de artículos estudiando factores críticos del éxito, existe un gran número de proyectos que pueden considerarse auténticos fracasos. Recientemente se viene reclamando un estudio de los proyectos y las organizaciones que los ejecutan desde una perspectiva organizativa. La idea principal es que los proyectos son desarrollados en el seno de organizaciones y por tanto, el estudio aislado de los proyectos debe completarse con un análisis de variables históricas y organizativas. De este modo el éxito individual de los proyectos es visto como condición necesaria pero no suficiente para lograr la supervivencia de la organización a largo plazo. A partir de una muestra internacional de proyectos, el presente trabajo analiza la relación entre el éxito de los proyectos y el de la organización.

Palabras clave: *éxito en proyectos; organizaciones basadas en proyectos; éxito en las carteras de proyectos.*

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1. Introduction

The prevalence of the use of projects within organizations has come along with the development of a discipline dedicated to improve their management (i.e. project management discipline). Developed in the 1950s by the US Air Force (Morris, 2012), project management discipline has been characterized by a normative character with the focus in the development and improvement of normative tools and techniques. Thus, during this first wave of project management research, project success was just explained by the correct or incorrect deployment of those tools and techniques (e.g. (Boynton & Zmud, 1984; De Wit, 1988; Pinto & Slevin, 1987; Pinto & Slevin, 1988). However, at the end of the 20th century, project management scholars began to think more widely about projects realizing that the ontology perspective based of normative assumptions with the focus on individual projects was not enough to fully gather all roles and limits projects have (Turner & Müller, 2003).

In today's turbulent and dynamic environments projects are no longer sporadic endeavors developed as a mean for facing specially challenge operations, but they have become a widespread practice for developing firm's daily work and implementing overall firm's strategy (Irja, 2006; Whittington, Pettigrew, Peck, Fenton, & Conyon, 1999). Therefore, the evolution of the role played by projects within permanent organizations has been accompanied by a paradigm shift in the project management discipline covered under the motto "rethinking project management" (Morris, 2012). Characteristics of the new project management research are the abandon of the lonely project perspective by studying the theoretical foundations and the history of projects; the awareness of the importance of project environment; a business centric view of projects, and the recognition of projects as temporary organizations and the study of the linkages between the permanent-PBF-, and the temporal-project- organization (e.g. achievement of corporate strategy through projects, the transfer of project knowledge to the whole organization, the creation of organizational capabilities through projects, etc.(Artto, Kujala, Dietrich, & Martinsuo, 2008; Engwall, 2003; Kujala, Artto, Aaltonen, & Turkulainen, 2010; Morris, Pinto, & Söderlund, 2012).

Thus, the problem of achieving individual project goals has been replaced for the problem of achieving organizational goals through projects performance. Within this new framework, developing successful projects has been recognized as necessary but no longer sufficient condition to secure long term organizational performance (Melkonian & Picq, 2011) and the disciplines for managing sets of projects such as project portfolio management and program management are gaining an increasing importance. Even more, the foci in project management research has shifted from project level to organizational level and the research of project-based firms has turned to a relevant literature stream in today's project management research. Thus, scholars have claimed that both projects and the firms developing these projects-project-based firms, should be studied from a management perspective, rather than from a technical one (Reich et al., 2013; Sydow, Lindkvist, & DeFillippi, 2004; Thiry & Deguire, 2007). Specifically, some intents have been made to study projects from a capabilities perspective e.g. (Biedenbach & Müller, 2012; Melkonian & Picq, 2011; Petit, 2012). However, but the questions of how project capabilities are built and above all, how they influence organizational capabilities and organizational performance are still unanswered.

The aim of this paper is to develop a dynamic capabilities-based model that shed light on the questions of how to achieve overall organizational success through multiple projects performance. Specifically, based on an international sample of projects, this paper addresses the question of how project success contributes to the overall firm performance. The rest of the paper is structured as follows. Section two provides a literature review of the dynamic capabilities framework and its connection to project management. Section three shows our

theoretical hypotheses. In Section 4, we apply partial least squares (PLS) structural equation modeling (SEM) to test our model on a sample of project-based firms. Finally, Section 5 discusses the main results of model testing and offers some conclusions and implications for research and practice.

2. Linking Project Management and Dynamic Capabilities

The disciplines of project management and strategic management are closely related, and as many authors have claimed, their cross-fertilization would have a lot of potential (Grundy, 1998). However, the two disciplines have developed independently and the opportunities of their union are currently under-exploited (Grundy, 1998). Recently, there have been some intents to study project management from a strategic perspective, being those linking project management with the capabilities approach (e.g. Davies & Brady, 2000; Jugdev, Mathur, & Fung, 2007; Melkonian & Picq, 2011) and dynamic capabilities approach (e.g. Biedenbach & Müller, 2012; Killen & Hunt, 2010; Petit, 2012) the most prominent ones.

Nevertheless, project management discipline and dynamic capabilities approach have developed quite independently but simultaneously over time. As already mention in the dynamic capabilities literature review, the three major theoretical papers for dynamic capabilities approach are Teece et al. (1997); Eisenhardt & Martin (2000); and Zollo & Winter (2002) and just in those years, the project management discipline develops its professionalization with the first edition publication of PMI PMBOK® and IPMA ICB® (1996 and 1999 respectively). Besides, the emergence of papers relating project management and strategy, and the conceptualization of projects as temporary organizations are concentrated around the late 90s and the early 2000s (e.g. Grundy, 1998; Hobday, 2000; Lundin & Söderholm, 1995; Turner & Keegan, 1999). Surprisingly, although there is a paper relating project management with capabilities approach in the year 2000 (Davies & Brady, 2000), this line of research remains barren until the second half of the first decade of the 21th century (e.g. Jugdev, Mathur, & Fung, 2007; Melkonian & Picq, 2011). In 2005, Kwak provides a definition of project management based on Fayol's five functions of a manager in which project management could be understood as the discipline of planning, organizing, coordinating, controlling, and commanding resources in order to achieve specific goals. In fact, this definition is connected to the definition of capabilities given by Helfat and Peteraf (2003) when they define capabilities as the ability of an organization to perform a coordinated set of tasks, utilizing organizational resources, for the purpose of achieving a particular end result.

The first appearance of dynamic capabilities within project management literature is represented by the conceptualization of project capabilities as a third kind of capability different from Chandler's (1992) strategic and functional ones, which are necessary to perform in today's turbulent and dynamic environments (Davies & Brady, 2000; Melkonian & Picq, 2011). Moreover, as shown in Table 1.1 (columns 1 to 3) dynamic capabilities definition along with some of their most distinctive features (e.g. capabilities change and reconfiguration, environmental dynamism, or their relationship with firm competitive advantages) are embedded within project management papers (Collyer & Warren, 2009; Irja, 2006; Kwak, 2005; Shenhar, Dvir, Levy, & Maltz, 2001).

Specifically, we find papers in project management literature claiming that project management implies change and evolution (Shenhar, Dvir, Levy, & Maltz, 2001; M. Thiry & Deguire, 2007; Turner & Müller, 2003), hence it is aligned with the definition of dynamic capabilities by Easterby-Smith and Prieto (2008), "those capabilities that connote change and evolution". In fact, the notion that projects and project management promote change in organizations is pervasive in project management literature, and the following quotes are an example: "efforts to renew business and to change existing operations in business firms are

often organized as projects” (Lundin & Söderholm, 1995 : 437). “Traditional functional organizations have frequently had to form a project teams to respond to rapidly changing market conditions” (Irja, 2006 :223), “in almost all cases projects are initiated to create change” (Shenhar et al., 2001 : 699), or “project management is being applied ... , and to the process of implementing strategic change” (Grundy, 1998 : 43). Overall, projects are understood as drivers of change since they are better suited for managing change than the functional organization (Turner, 2003; Turner & Müller, 2003).

Project management literature also recognizes the important role of market dynamism in project performance. Project management interprets context dynamism as a dimension of a project representing the extent to which a project is influenced by changes in the environment (Collyer & Warren, 2009). Shenhar & Wideman (2000) argue that projects surrounded by dynamic environments must have at least two, but typically three different design cycles. Furthermore, those dynamic projects involve the use of novel technologies (Shenhar & Wideman, 2000). Therefore, depending on the level of context dynamism, projects must be conducted by different approaches (Collyer & Warren, 2009). This contingent approach to project management is directly connected to Eisenhardt and Martin (2000) concern about how the level of dynamism shapes dynamic capabilities and their “outcomes”. Another important aspect of Eisenhardt & Martin (2000) model is the observation that dynamic capabilities exhibit common features across firms and could be understood as best practices. However, the existence of commonalities among effective dynamic capabilities does not imply that dynamic capabilities are exactly alike across firms (Eisenhardt & Martin, 2000). This duality, although striking, is widely accepted in project management. On the one hand, a lot has been done in the project management practical side to professionalize project management practices and due to that effort a shared standard consisting of processes and methodology generally accepted have been developed (Melkonian & Picq, 2011). Although general and standard, these project management standards recognize that the practices they include are susceptible of different applications according to project specifications, needs and objectives, and even the characteristics of the company itself implementing the project are an important variable.

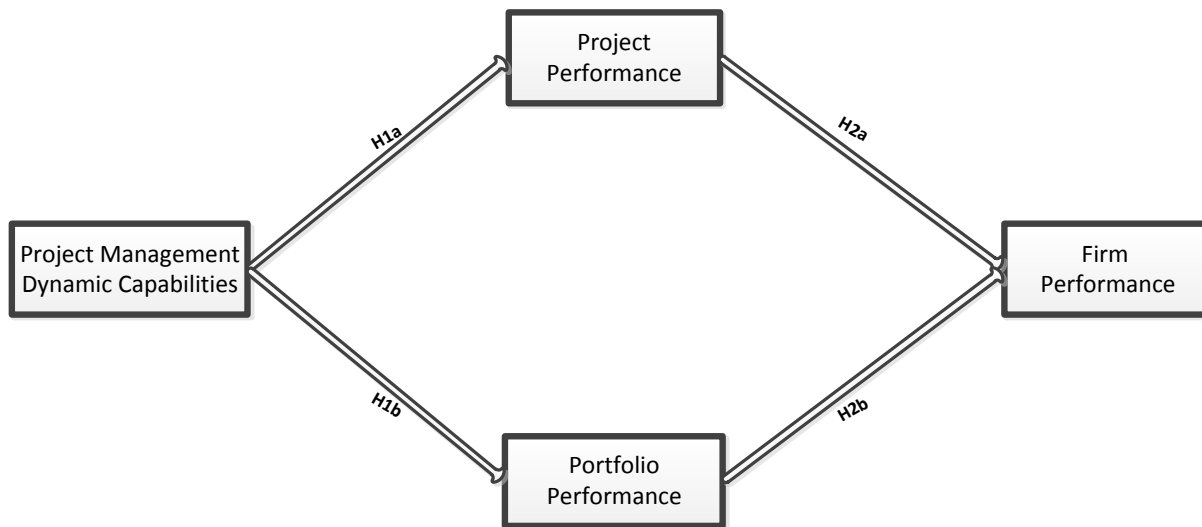
Recently, project management literature is getting closer to the Teece et al. (1997) idea of creating competitive advantages. Scholars suggest that only PBFs capable of developing project (dynamic) capabilities would we able to overcome the dichotomy among the individual nature of projects and the long-term and stable objectives of the overall organization’s strategy. Project (dynamic) capabilities are defined as the internal ability of a PBF to create lasting performance based on multiple short term projects (Davies & Brady, 2000). Thus, project (dynamic) capabilities help PBFs to align individual project objectives with the overall organizations strategy creating long term performance through multiple single projects outcomes (Davies & Brady, 2000). Therefore, projects are understood nowadays as sources of organizations’ competitive advantages (Killen & Hunt, 2010; Pinto, 2007; Thiry & Deguire, 2007; Turner & Müller, 2003). As Shenhar et al. say (2001 : 700) “without projects, organizations would become obsolete and irrelevant, and unable to cope with today’s competitive business environment”.

Regarding empirical papers, project management scholars have tried to adapt the dynamic capabilities approach to the portfolio level in an attempt to find solutions for portfolio management and success under conditions un uncertainty and dynamism (Biedenbach & Müller, 2012; Killen & Hunt, 2010; Petit, 2012). However, to the best of our knowledge, there is no paper linking dynamic capabilities to project management neither within the project level nor within the PBF level.

3. Theoretical Model and Hypotheses

Figure 1 shows the theoretical model of the link between project management dynamic capabilities, performance at the operative level (both projects and portfolio performance), and overall firm performance.

Figure 1. Theoretical model for project management dynamic capabilities



Project Management research advance through the use of theories from the strategic management domain (Killen et al., 2012). Especially relevant are the articles that apply the resource-based view and the dynamic capabilities approach to the study of projects and project management. Theoretically, project management capabilities are described as a necessary condition for achieving firm performance through multiple project success (Davies & Brady, 2000). Empirically, Petit (2012) studies project dynamic capabilities within an environment of high uncertainty discovering that project dynamic capabilities help firms to manage project portfolios. Biedenbach and Müller (2012) study project dynamic capabilities by researching the effects of absorptive, innovative and adaptive capabilities on short- and long-term project performance and portfolio performance. In this paper, we examine the influence of project dynamic capabilities on performance at the operative level. Specifically, we test if project dynamic capabilities enhance project and portfolio performance.

Regarding project performance, project management dynamic capabilities encompasses routines aimed at identifying changes in project environment, and stakeholders' behavior that could affect project's output and may imply the modification of project plan and project scope (Pollack, 2007). Thus, project management dynamic capabilities provide project managers with the flexibility needed for reconfiguring and adapting the project plan to changes both in the environment and client needs. Furthermore, project management dynamic capabilities comprehend routines that evaluate the appropriateness of current project management routines and provide project managers with the ability for redeploying project assets, hence, renewing inappropriate project management routines. Thus, we claim that project management dynamic capabilities enhance project performance by helping project managers to address relevant changes. We therefore hypothesize:

H1a. Project management dynamic capabilities have a positive effect on project performance.

At the portfolio level, project management dynamic capabilities deal with the consolidation of project knowledge so the firm can fully exploit its project management routines and achieve a long-term performance through multiple short-term projects. Project management dynamic capabilities provide the firm with the ability for inter-project knowledge transfer avoiding the problem of repeating the same mistakes over and over again (Boh, 2007). Moreover, project management dynamic capabilities help to consolidate project learning and spreading it throughout the entire firm (Brady & Davies, 2004). Project management dynamic capabilities prevent project knowledge losses after project closing and the dissolution of the team (Brady & Davies, 2004). Thus, the development of project management dynamic capabilities allows the firm to achieve portfolio performance based on multiple individual project performance (Cooke-Davies, 2002). Furthermore, project management dynamic capabilities help to identify deviations in the strategic fit of the portfolio providing project managers with the ability for resource reallocation and the reprioritization of projects in time (Jonas, 2010). We therefore offer the following hypotheses:

H1b. Project management dynamic capabilities have a positive effect on portfolio performance.

Firms in the construction and engineering sectors and also in dynamic or creative industries (e.g. film-making, IT, or entertainment) organize much of their business transactions in projects (DeFillippi & Arthur, 1998; Wikström, Artto, Kujala, & Söderlund, 2010). Therefore, for firms in these kinds of industries, project performance is a critical part, and almost the only critical factor for the achievement of the overall firm performance. Moreover, many firms from a wide range of industries are using projects for managing specialize intellectual activities such as new product development and R&D activities (Lindkvist, 2004). Given the advantages of project implementation (i.e. its intrinsically flexible and innovative nature, and its capacity to coping with emerging situations; Hobday, 2000), firms are conducting their business in projects instead of continuing manufacturing of service activities (Shenhar et al., 2007). Furthermore, firms are increasingly using projects for implementing different day-to-day activities (Engwall, 2003; Irja, 2006). Thus, projects can be seeing as subordinates of the firm's objectives (Shenhar et al., 2007) and the top-down tools for implementing the overall strategy of the firm (Mutka & Aaltonen, 2013). Given this discussion, we offer the following hypotheses.

H2a. Project performance has a positive effect on overall firm performance.

According to Voss (2012), a successful project portfolio management represents an organization's investment strategy and has the potential to provide benefits beyond individual projects performance. For example, regarding customer management, the implementation of a project implies the establishment of strong ties that can further strengthen already existing relationships or promoting the acquisition of new customers (Voss, 2012). Moreover, scholars posit that projects are not only servants to overall organizational strategy but also source of new business models (Artto, Kujala, Dietrich, & Martinsuo, 2008). Empirically, Mutka and Aaltonen (2013) study 6 different project-based organizations finding some projects that instead of being an operationalization of some firm's strategic objective, they constitute an autonomous business model with the potential to reshape the strategy of the firm, hence, having a bottom-up effect instead of being a top-down tool. Moreover, many projects serve as strategic arenas to develop new capabilities that can be reused in future business (Davies & Hobday, 2005). In fact, even though a project failed to meet its objectives and would be considered a failure, that project could enhance the performance of the whole portfolio if its lessons learned are transferred to the whole firm helping other project managers to repeat the same mistakes. Thus, we hypothesize:

H2b. Portfolio performance has a positive effect on overall firm performance.

4. Methodology and Results

In order to test the theoretical model depicted in Figure 1 we develop a questionnaire that was subjected both to a pretest and a pilot prior to its usage. The target population is formed by CEOs and project managers of firms from different industries and countries that in a greater or lesser extent are used to implement projects. Specifically, the questionnaire was sent to firms from the Thomson One database including the keyword “project” when describing their business.

The response rate was 3.7% corresponding to a sample size of 63 cases. The low response rate is consistent with previous studies noting that top managers are “notoriously unwilling to submit themselves to scholarly poking” (Hambrick, 2007:337). Despite the low response rate, we consider our sample as a quality one since it includes great diversity (Blair & Zinkhan, 2006). Our sample contains firms from 22 different countries (56% from Europe, 25 from North America, 19% from the rest of the world) that belong to 21 sectors (e.g. metal mining, management services, engineering services, oil and gas extraction, etc.). Regarding firm size, 60% can be considered SMEs firms (less than 250 employees) and the remaining 40% are large firms.

We measure all items with five-point Likert scale ranging from strongly disagree/never to strongly agree/always. The selection of the items is based on a literature review that provided us with valid scales that were also refined during the pretest and pilot results. However, for the project management dynamic capabilities construct there was no valid scale available so we develop an ad-hoc scale based on the routines described in two project management standards.

Specifically, project management dynamic capabilities are operationalized in 15 items. These items described routines included in two of the most widely used project management standards (i.e. the Project Management Body of Knowledge, PMBOK®; and the International Competence Baseline, ICB®) that can be considered as the micro-foundations of project management dynamic capabilities. Theoretically, we based on the conceptualization of dynamic capabilities as high-level routines (collection of routines) given by Winter (2003). Moreover, several empirical papers have measured dynamic capabilities through the routines underlying them (e.g. Adner & Helfat, 2003).

Project performance is measured with six items adapted from the scale developed in Biedenbach and Müller’s (2012) article. This scale measured project performance from a double perspective since it accounts for both aspects of the project management routines such as schedule and budget objectives, and the project output.

Portfolio performance is also measured with a scale from Biedenbach and Müller’s (2012) article. The four items forming the portfolio performance construct captures the balance of the portfolio resources and the strategic alignment of the projects forming the portfolio.

Finally, firm performance is operationalized in five items. Specifically, we use five perceptual indicators related to perceived sales and market share and perceived adaptability (Pleshko & Nickerson, 2008). Thus, we follow the premise that firm performance includes three conceptual areas: profitability, market share, and adaptability (Pleshko & Nickerson, 2008).

5. Measurement Model

Regarding reflective scales, almost all item loadings exceed the 0.7 limit, which indicates excellent item reliability. Four items of project management dynamic capabilities and one of firm performance have loading under the 0.7 limit, but still the loadings are around the 0.6 limit that is considered acceptable for scales in early stages of development (Chin, 1998). Constructs’ internal consistency is also excellent since both the Cronbach’s alpha and composite reliability exceeds the boundary of 0.8 (Nunnally, 2010). Finally, the three

reflective constructs presents good results for the convergent and discriminant validity since the AVE exceeds the limit of 0.5 and its square root is larger than inter-constructs correlations (see Table 2), (Fornell & Larcker, 1981).

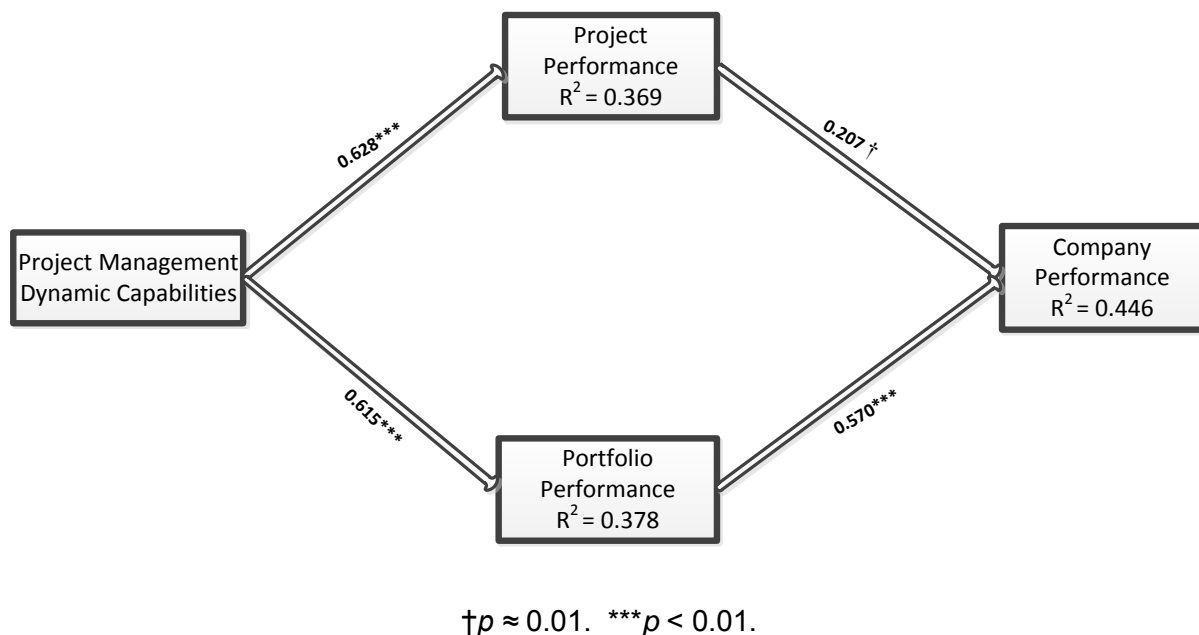
The evaluation of formative scales is different from that of the reflective ones. The examination of items weights, which represent canonical correlations, provide information about the importance of each item in the construct. In the case of portfolio performance, which is our only formative construct, all items have a positive weight being the one expressing the number of projects and the two expressing the strategic alignment the most important ones.

6. Structural Model

Figure 2 shows the results for the theoretical model including the path coefficients and the R square for the endogenous variables. The structural model explains 44.6% of the variance in company performance. Moreover, project management dynamic capabilities explain 36.9% and 37.8% of the variance of project and portfolio performance respectively.

Regarding hypotheses testing, project management dynamic capabilities do directly affect the performance of both projects and portfolio, hence we fail to reject either H1a nor H1b at the 99% confidence level. Finally, project performance has direct but not statistically significant influence on the overall firm performance (we reject H2a) while project performance has both direct and statistically significant at the 99% confidence level influence on the overall firm performance (we fail to reject H2b).

Figure 2. Hypothesized top management model with path coefficients



7. Conclusion

The purpose of the paper is to examine how project success contributes to overall firm performance. In doing so, we unpack the concept of project management dynamic capabilities by highlighting the project management routines behind the development and implementation of this type of dynamic capabilities.

We provide project managers with new tools for managing their projects and achieve success under turbulent environments. Specifically, we provide them with a non-exhaustive list of 15 project management routines that can be considered as micro-foundations of a project management dynamic capability. Furthermore, our results support the idea that achieving individual project performance is not sufficient condition for the achievement of long-term firm performance (Melkonian & Picq, 2011). In fact, we find that project performance is directly but not significantly ($t=1.206$) related to firm performance while portfolio performance is directly and highly significantly related to firm performance. In light of these results we posit that projects have to contribute to the general strategy of the firm and that even though a project does not fulfill its objectives, it can still enhance the whole performance of the firm if helps other projects in the portfolio to achieve their objectives (for example by transferring project knowledge via lessons learned).

This study suffers from some limitations. The cross-sectional design does not allow us to observe the long-term impact of project dynamic capabilities on operational or overall firm performance. We measure all constructs at the same point in time but we propose a sequential model. Thus, our paper will benefit from a longitudinal approach or a case study for a better and fuller understanding of the links between dynamic capabilities, operational performance and overall firm performance.

Future research will need to continue uncovering project management routines that contribute to the sensing and seizing of opportunities and the reconfiguration of plan and procedures. Moreover, future studies should include project management routines as a mediator in the relation between project management dynamic capabilities (those that modify and reconfigure the operational project management capabilities) and project and portfolio performance.

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